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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/682,345 | 08/22/2001 | Michael L. Combs | BUR920000163 | 6808 |

23123 7590 07/16/2003

SCHMEISER OLSEN & WATTS
18 E UNIVERSITY DRIVE
SUITE # 101
MESA, AZ 85201

EXAMINER

TANG, MINH NHUT

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2829

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/682,345

Applicant(s)

COMBS ET AL.

Examiner

Minh N. Tang

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-- The MAILING DATE of this communication appears in the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of species of Fig. 4 in Paper No. 4 is acknowledged. The traversal is on the ground(s) that "the search and examination of the species of the entire application could be made without serious burden", and "claims 1, 12, and 14 are generic". This is not found persuasive because it is believed that a serious burden would be imposed in having to search the numerous species and their accompanying differences in structural features and combinations of elements. Furthermore, it is believed that claims 1-11 are readable on Fig. 1, and claims 12-20 are readable on Fig. 4, therefore claims 1, 12, and 14 are not generic.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 1-11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 4.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on August 27, 2001 (Paper No. 2) is considered by the examiner.

Drawings

4. The drawings are objected to because reference numbers 8, 10 in Fig. 2, reference number 26 in Fig. 4 are all associated with an empty "black box" which should have a corresponding label. A proposed drawing correction or corrected drawings are

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required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities:

a/ on page 6, lines 6-7, and 11 (counted by hand), it is not clear “5 $\hat{\text{I}}\text{C}$ ”, “10 $\hat{\text{I}}\text{C}$ ”, “20 $\hat{\text{I}}\text{C}$ ”, or “35 $\hat{\text{I}}\text{C}$ ”, “1 $\hat{\text{k}}\text{I}\text{C}$ ”, and “10 $\hat{\text{k}}\text{I}\text{C}$ ” represent.

b/ on page 9, line 30 (counted by hand), it is not clear “.5 $\hat{\text{I}}\frac{1}{4}\text{s}$ ” represents.

c/ on page 10, lines 2 and 3 (counted by hand), it is not clear “.1 $\hat{\text{I}}\frac{1}{4}\text{s}$ ”, “.3 $\hat{\text{I}}\frac{1}{4}\text{s}$ ” represent.

Appropriate correction is required.

6. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

7. The Amendment filed May 07, 2003 (Paper No. 4) has been entered.

Claim Objections

8. Claims 12 and 14 are objected to because of the following informalities:

a/ in claim 12, “the chip-to-package connectivity” (line 1), and “the package semiconductor device” (lines 3-4) should be -- a chip-to-package connectivity -- and -- the semiconductor device --, respectively.

b/ in claim 14, “a common I/O” (line 4) should be -- the common I/O --.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 12-13, 18 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 12, the limitation "the I/O" (line 6) has not been recited previously; therefore this term is indefinite. For examination purposes, "the I/O" is interpreted as -- the I/O of the semiconductor device --.

In claim 18, the limitation "a fixture impedance coupled between the test fixture and at least one of the semiconductor device and a potential relative to the semiconductor device" is vague. The connection between "a fixture impedance" and "the test fixture", "at least one of the semiconductor device", "a potential relative to the semiconductor device" is unclear. Furthermore, since only one semiconductor device has been recited in the claim (i.e., claim 14), therefore it is not clear why claim 18 recited "at least one of the semiconductor device".

In light of the uncertain language found in the claim, no art has been applied to claims 18 and 19. Therefore, the claims are not necessarily allowable over prior art until applicants clarify the meaning of the claim's limitations.

Claims 13 and 19 are rejected since they depend on rejected base claim.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 12-16, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Saitoh (U.S.P. 6,397,361).

As to claim 12, Saitoh discloses, in Fig. 7, a method of reduced pin count testing a chip-to-package connectivity of a semiconductor device (202), the method comprising: launching a transition signal (I) from a common I/O driver (720) on the semiconductor device (202); observing a response of the transition signal (I) at a point (718) within the semiconductor device (202); determining whether a chip-to-package connection (i.e., connection between point 718 and chip pad 110) associated with the I/O (110) of the semiconductor device (202) is faulty from the response of the transition signal (I).

As to claim 13, Saitoh discloses in Fig. 7, driving the transition signal (I) with a weak driver (i.e., driver 720 associated with resistor 712).

As to claim 14, Saitoh discloses, in Fig. 7, an apparatus configured to launch a test signal (I) to a common I/O (110) of a semiconductor device (202) from a driver (720) on the semiconductor device (202) which is associated with the common I/O (110) using reduced pin count testing, the apparatus comprising: a test fixture (702) configured to couple to the common I/O (110) of the semiconductor device (202); a weak driver impedance (712) coupled between the driver (720) and the test fixture (702); wherein the apparatus is configured to launch the test signal (I) through the weak driver impedance (712) and the common I/O (110) to the test fixture (702) and evaluate

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a characteristic of a response to the test signal (I) to determine whether a chip-to-package connection (718) associated with the common I/O (110) is faulty.

As to claim 15, Saitoh disclose in column 12, lines 35-37, the weak driver impedance (712) includes a switchable impedance (i.e., adjustment resistor).

As to claim 16, Saitoh disclose in column 12, lines 35-37, the weak driver impedance (712) is an impedance having a resistive value of 1 K Ω .

As to claim 20, Saitoh disclose in column 12, lines 35-37, the weak driver impedance (712) includes a variable impedance (i.e., adjustment resistor).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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15. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Saitoh (U.S.P. 6,397,361).

As to claim 17, Saitoh discloses all limitations recited in the claim except for the weak driver impedance (712) is approximately 10 K Ω or more. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the adjustment weak impedance (712) of Saitoh in the range of 10 K Ω or more, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

| | | |
|----------------|-----------|--|
| Lacroix et al. | 6,260,163 | Testing High I/O Integrated Circuits On A Low I/O Tester. |
| Shimasaki | 6,020,752 | IC Testing Device Adapted To Selectively Use I/O Common System And I/O Split System Functions. |
| Aria | 5,602,989 | Bus Connectivity Verification Technique. |
| Nishiura | 5,241,264 | IC Test Apparatus. |

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh N. Tang whose telephone number is (703) 305-1652. The examiner can normally be reached on M-F (6:30-4:00) first Fri. Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mrs. Cuneo, Kamand can be reached on (703) 308-1233. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.

A handwritten signature in black ink, appearing to be 'MT' with a long, sweeping horizontal line extending to the right.

Minh Tang
July 3, 2003